REMARKS

The Office Action Summary of the January 4, 2010 Office Action indicated that it was responsive to the communication filed on November 20, 2009 and that claims 19-36 were pending. However, claim 24 was canceled and claims 37-39 added in the Amendment filed October 20, 2009 and these changes to what claims were pending were indicated in the Supplemental Amendment filed November 20, 2009. Since claims 37-39 were discussed in the Detailed Action, it is assumed that the October 20, 2009 Amendment was entered, the list of claims on the Office Action Summary was a mistake, and the Examiner is aware that claims 19-23 and 25-39 are pending and under consideration.

Rejections under 35 U.S.C. § 103

Independent Claim 19

In item 2 on pages 3-25 of the January 4, 2010 Office Action, claims 19-36 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,907,015 to Moulsley et al. in view of U.S. Patent Application Publication 2002/0021683 to Holtzman et al. As noted above, claim 24 was canceled and claims 37-39 were added in the October 20, 2009 Amendment; therefore, claims 19-23 and 25-39 will be discussed below.

The January 4, 2010 Office Action does not contain a "Response to Arguments" section and many of the arguments in the October 20, 2009 Amendment appear to have not been addressed. Therefore, much of the argument in the October 20, 2009 Amendment will be repeated below. If another Office Action is issued, the Examiner is respectfully requested to clearly indicate in some manner that all of the arguments were considered.

With the exception of the discussion of Holtzman et al. on page 6 of the Office Action and changes related to changes in claim language, the rejection of claim 19 in the January 4, 2010 Office Action was substantially the same as in the May 20, 2009 Office Action. Italicized text was added that appears to contain the words in the portions of Moulsley et al. that were cited in the May 20, 2009 and January 4, 2010 Office Actions. As a result of the changes to the claim language in the October 20, 2009 Amendment and (at the bottom of page 5) the further changes in the Supplemental Amendment filed November 20, 2009, column 1, lines 49-52; column 3, lines 11-15; and column 5, lines 43-47 of Moulsley et al. were cited and incorporated as italicized text, e.g., at page 4, lines 3-6 and page 4, last line to page 5, line 6 of the January 4, 2010 Office Action.

In col. 3, lines 11-20, Moulsley et al. states:

> A signature is a signal characterised by its scrambling code and channelisation code modulated by a specific bit sequence. A mutually orthogonal set of signatures can be obtained by defining a set of mutually orthogonal bit sequences for the modulation. One example of such a set is shown in FIG. 3, the set comprising 16 signatures P_0 to P_{15}. Each signature P_i comprises 16 complex symbols S, each of which is either A or -A, where A=1+j. The inverse of each signature is obtained by interchanging A and -A. The signatures and their inverses are all mutually orthogonal

(emphasis added). Further, in col. 3, lines 46-54, Moulsley et al. states:

> As well as informing the MS 110 that its preamble 202 has been received, the acknowledgement 206 may be positive, to signal that the requested channels are free, or negative, to signal that they are in use and access is denied to the MS 110. A negative acknowledgement (NACK) may be indicated by the BS 100 inverting the phase of the signature (with respect to some reference or pilot signal). Alternatively, some of the signatures used by the BS 100 for acknowledgement may also be used as a NACK

(emphasis added). From the above-reproduced portions of Moulsley et al., it is submitted that a person of ordinary skill in the art would infer that, for the first access of a mobile station MS to a base station BS (corresponding to steps 502 to 514 of Fig. 5), the base station BS uses a set of signatures for signalling positive acknowledgements to the mobile station MS, while for negative acknowledgements (NACK), a set of inverted signatures is used. Once the mobile station MS has received a positive acknowledgement from the base station BS, a subsequent contention resolution process is initiated (corresponding to steps 516 and 518 of Fig. 5). According to this process, the mobile station MS chooses and transmits another signature for the contention resolution preamble to the base station BS. Then, the base station BS uses the set of signatures from which the mobile station MS has chosen to acknowledge the mobile station's contention resolution preamble. At the same time, the base station BS uses the inverted set of signatures for channel allocation, wherein the inverted signatures indicate channelization codes to be used by the mobile station MS.

In col. 4, lines 40-46, Moulsley et al. states:

> In a system in accordance with the present invention, this problem is alleviated by enabling the BS 100 to signal allocation of a packet channel at the same time as it transmits an access acknowledgement 206 or a contention resolution acknowledgement 210. This signalling may form part of the acknowledgement 206,210 or may be transmitted at the same time, preferably with the same channelisation code.

(emphasis added). Also, in col. 5, lines 38-52 relating to FIG. 5, Moulsley et al. states:

> Next, the MS 110, at step 516, transmits a contention resolution preamble 208 using a randomly selected signature. The BS 100 acknowledges at most one of the contention resolution preambles 208, and at the same time indicates the

> channelisation code for the PCCH 212 and the scrambling code for the uplink packet channel. With a choice of 16 signatures and their inverses it is possible to acknowledge up to 16 different preamble signatures with one code word, and at the same time to send another code word indicating one of up to 16 different channelisation codes. To avoid the case of needing to transmit a signature and its inverse at the same time, the signatures may be divided into two sets. The first set and its inverses are used for acknowledgements 210, while the second set and its inverses are used for channel assignments.

(emphasis added).

Thus, in Moulsley et al., the inverted set of signatures is used differently depending on whether it is used for an initial access or for a subsequent contention resolution. In the initial access process, the inverted signatures are used for negative acknowledgements. In contrast, in the subsequent contention resolution process, no negative acknowledgements are needed anymore as the mobile station MS either receives a contention resolution acknowledgement (CA) and a channel allocation or nothing (which loops the mobile station MS back to step 504 in Fig. 5). This enables the base station BS to use the inverted set of signatures for channel allocation.

On page 6 of the Office Action, it was asserted that Holtzman et al. discloses "at least one signature character sequence used for encoding the second decision value is created by multiplying only each second character of a signature character sequence of the first set of signature character sequences by -1" at paragraph [0076], lines 2-5. The differences between the quoted text (from claim 19, lines 13-16) and Holtzman et al. will be discussed below. However, it is submitted that Moulsley et al. in view of Holtzman et al. does not teach or suggest

> sending from the base station to the mobile terminal a response signal containing a first decision value, wherein a first set of signature character sequences is used for encoding the first decision value in the response signal, the first decision value indicating whether the mobile terminal is authorized to send a message on the specific transmission channel and, if the first decision value indicates the mobile terminal is refused authorization to use the specific transmission channel and the mobile terminal is authorized to send a message on another transmission channel, the response signal including a second decision value, wherein said second decision value in the response signal is encoded using at least one signature character sequence orthogonal to the first set of signature character sequences

as recited in amended claim 19.

First, it is submitted that Moulsley et al. fails to teach or suggest signaling a negative acknowledgement using a first signature and indicating authorization to use another transmission channel (which, according to the Office Action, corresponds to the channel allocation in Moulsley et al.) using a second signature in a response signal, where the second signature is derived from the first signature by inverting only the second character of the first signature).

Second, it is submitted that Holtzman et al. does not fully overcome this deficiency in Moulsley et al. The inverted signatures in Moulsley et al. are either used for negative acknowledgement (in the first access process) or channel allocation (in the contention resolution process), not for both at the same time. To signal allocation of a channel simultaneously (i.e., in the same response signal) with a negative acknowledgement, the base station BS in Moulsley et al. would need to use different sets of signatures, which have to be mutually orthogonal so that the mobile station MS may detect them at the same time. No suggestion has been found Moulsley et al. of signaling using two sets of signatures. Specifically, Moulsley et al. does not teach or suggest performing a channel allocation at the same time as signaling a negative acknowledgement.

The January 4, 2010 Office Action contained no response to the preceding arguments and as a result, it is submitted that these distinctions over Moulsley et al. are valid even when combined with Holtzman et al. Nothing has been cited or found in Holtzman et al. suggesting modification of Moulsley et al. to overcome the deficiencies of Moulsley et al. discussed above.

Furthermore, paragraph [0076] of Holtzman et al. which, as noted above, was cited as disclosing "at least one signature character sequence used for encoding the second decision value is created by multiplying only each second character of a signature character sequence of the first set of signature character sequences by -1" (claim 19. lines 13-16), describes generation of "an ordered sequence of alternating plus and minus one values (i.e., 1, -1, 1, -1, 1,...)" by a phase rotator. However, paragraph [0076] of Holtzman et al. can only be understood in the context of paragraph [0070] which describes the phase rotator randomly multiplying a plus or minus one value to the orthogonal codes. In the given example, with the rotator's random values of -1, -1, and 1, this is done by multiplying the first code (row 2 of the Walsh matrix of Fig. 3 of Holtzman et al.) with a value -1, multiplying the second code (row 6 of the Walsh matrix) with a value -1, and multiplying the third code (row 13 of the Walsh matrix) with a value 1. There is thus no multiplication of the individual characters of the codes (corresponding to the characters in the recited signature character sequences), but only of the codes of the matrix. The sequence of alternating plus and minus one values, as discussed in paragraph [0076] of Holtzman et al., would be multiplied in the same way, i.e., the code of the first row of the Walsh matrix of Fig. 3 of Holtzman et al. would be multiplied by 1, while the code of the second row is multiplied by -1, and the code of the third row is multiplied again by 1, etc. Thus, according to Holtzman et al., all characters of a code (a row of the Walsh matrix) are either multiplied with a 1 or with a -1. This presents a completely different result compared to "multiplying only each second character of a signature character sequence" as recited in claim 19. The operation

recited in claim 19 effectively results in a multiplication of every column (of the matrix) with either -1 or 1, not of every row (of the matrix) as disclosed in Holtzman et al.

For the above reasons, it is submitted that claim 19 and claims 20-23, 25-31 and 37 which depend therefrom patentably distinguish over Moulsley et al. in view of Holtzman et al.

Independent Claim 32

The rejection of claim 32 on pages 13-16 of the January 4, 2010 Office Action contained statements similar to those made in rejecting claim 19. Since the sending operation recited on lines 5-16 of claim 19 and the last 12 lines of claim 32 uses identical words, it is submitted that claim 32, as well as claim 38 which depends therefrom, patentably distinguishes over Moulsley et al. in view of Holtzman et al. for the reasons discussed above with respect claim 19.

Independent Claim 33

In view of the above discussion of the prior art, independent claim 33 and claim 39 which depends therefrom patentably distinguish over the prior art at least by reciting

> detecting at the mobile terminal a first decision value in the response signal, wherein a first set of signature character sequences is used for encoding the first decision value in the response signal, the first decision value indicating whether the mobile terminal is authorized to send a message on the specific transmission channel,"

and

> analyzing at the mobile terminal, upon detection that the first decision value indicates refusal of authorization for the mobile terminal to send the message on the specific transmission channel, the response signal to determine whether a second decision value therein indicates authorization for the mobile terminal to send the message on another transmission channel, wherein said second decision value in the response signal is encoded using at least one signature character sequence orthogonal to the first set of signature character sequences, and wherein the at least one signature character sequence used for encoding the second decision value is created by multiplying only each second character of a signature character sequence of the first set of signature character sequences by -1.

Independent Claim 34

In view of the above discussion of the prior art, independent claim 34 and claim 35 which depends therefrom patentably distinguish over the prior art at least by reciting

> an encoding device generating a response signal to the mobile terminal containing a first decision value, wherein a first set of signature character sequences is used for encoding the first decision value in the response signal, the first decision value indicating whether the mobile terminal is authorized to send the message on the specific transmission channel and containing a second decision value when the first decision value indicates refusal of authorization for the

mobile terminal to send the message on the specific transmission channel and the mobile terminal is authorized to send a message on another transmission channel, wherein said second decision value in the response signal is encoded using at least one signature character sequence orthogonal to the first set of signature character sequences, and wherein the at least one signature character sequence used for encoding the second decision value is created by multiplying only each second character of a signature character sequence of the first set of signature character sequences by -1.

Independent Claim 36

In view of the above discussion of the prior art, independent claim 36 patentably distinguishes over the prior art at least by reciting

a processor generating a send authorization request signal for a specific transmission channel and decoding a response signal sent by the base station to detect a first decision value, wherein a first set of signature character sequences is used for encoding the first decision value in the response signal, the first decision value indicating whether the mobile terminal is authorized to send a message on the specific transmission channel, said processor, upon detecting that the first decision value indicates refusal of authorization to send the message on the specific transmission channel, analyzing the response signal to determine whether a second decision value is included therein authorizing the mobile terminal to send the message on another transmission channel , wherein said second decision value in the response signal is encoded using at least one signature character sequence orthogonal to the first set of signature character sequences, and wherein the at least one signature character sequence used for encoding the second decision value is created by multiplying only each second character of a signature character sequence of the first set of signature character sequences by -1

Summary

It is submitted that the references cited by the Examiner do not teach or suggest the features of the present claimed invention. Thus, it is submitted that claims 19-23 and 25-39 are in a condition suitable for allowance. Reconsideration of the claims and an early Notice of Allowance are earnestly solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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